DOCUMENT RESUME

ED 144 399 FL 008 903

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TITLE Towards Characterizing Perceptual Strategies of Second Language Readers. Occasional Papers on Linguistics, No. 1.
INSTITUTION Southern Illinois Univ., Carbondale. Dept. of Linguistics.
PUB DATE Apr 77
NOTE 10p.; Proceedings of the International Conference on Frontiers in Language Proficiency and Dominance Testing (1st, Southern Illinois University, Carbondale, Illinois, April 21-23, 1977)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS Cognitive Processes; *Contrastive Linguistics; *English (Second Language); *Error Analysis (Language); Interference (Language Learning); Japanese; Language Research; Learning Processes; Learning Theories; Linguistic Competence; Linguistic Theory; Persian; *Psycholinguistics; *Reading Processes; Reading Research; *Second Language Learning; Spanish; Surface Structure
IDENTIFIERS *Language Processing; Perceptual Strategies

ABSTRACT

Little has been done to test or describe reading strategies of second language learners. The study reported in this paper was an attempt to begin to investigate the nature of perceptual strategies which second language learners employ when reading certain English structures, and to ask the question of whether second language learners, when learning to read, are guided by strategies which result in specific errors. Three structures were tested for three language backgrounds -- Japanese, Spanish, and Persian -- based on a combined contrastive and error analysis. Two problem structures were tested for each language group, one involving a specific, predictable error, the other involving general difficulty. Thirty college ESL (English as a second language) students served as subjects, ten from each language group. Results included the following: (1) subjects had more difficulty with test items than with non-test items; (2) there seems to be a correlation between the two results from the two testing devices; and (3) subjects misprocessed the sentences in ways predicted in the case of the Spanish and Persian subjects, but not in the case of the Japanese subjects. Generally, it seems that a contrastive investigation of surface structures of the native and target languages is helpful in predicting areas likely to cause processing difficulties. (AM)

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Towards Characterizing Perceptual Strategies of Second Language Readers

E. Carol Brownscombe

Psycholinguists have produced interesting theories, models, and research concerning the existence of perceptual strategies and the nature of those strategies for first language speakers. Bever's 1970 article, "The Cognitive Basis for Linguistic Structures" is one of the best known discussions of psychological strategies and how they relate to the processing of English.

Goodman (1970), in his active-hypothesis-testing theory of reading, implies that strategies such as those outlined by Bever are operating when a reader decodes the printed language. So when a native speaker-reader of English confronts a sentence visually, he encounters a surface structure, and he makes and tests hypotheses about the clause boundaries and relationships of words within and between clauses as he moves through the sentence. For making hypotheses, he has available to him various perceptual strategies which are a part of his language competence.

It is not clear to what extent these strategies are universal and to what extent language specific. But certainly an interesting question to be asked by those who teach and research reading in a second language is: how does the second language learner acquire the competence to use cues successfully in deciphering the written second language, and more specifically, what strategies does the L_2 learner apply in learning to read?

Little has been done to test or describe reading strategies of second language learners. One exception is Cowan (1976) who maintains that if we accept the possibility that perceptual strategies are employed by native speakers when reading, it is reasonable to suppose that learning to read a second language might be hindered by the learner's application of strategies from his first language. A very clear example of this can be found in English speakers learning to read German.

Both English and German are Subject-Verb-Object languages, but German has a stylistic Object-Verb-Subject variation which is very common in prose. For native speakers of German, there is no problem in determining which noun is the object and which the subject because they rely on the case form of the noun modifier. Since English does not have case forms for noun modifiers and since English relies heavily on the strategy of: <u>first noun = subject</u> unless marked otherwise, there is a problem for English speakers reading or learning to read German. They overlook the case marker and so can easily confuse the subject and object in an Object-Verb-Subject sentence. This could conceivably cause a serious comprehension problem.

The general purpose of the study reported on here was to begin to investigate the existence and the nature of perceptual strategies which second language readers employ when reading certain English structures, and to ask the question of whether L_2 learners, when learning to read, are guided by strategies which result in specific errors.

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The pilot test which was conducted during the fall semester of 1976 (Brownscombe, 1977) was used to provide some information about the degree and kinds of errors that Japanese, Spanish, and Persian speakers make in processing six forms of English relative clauses, and secondly, it was used to look carefully and critically at the test devices. The pilot test fulfilled its aim; however, it did not yield enough specific information as to how or why readers miscomprehend as they do.

The larger study, therefore, attempted to reduce the scope of the question so as to arrive at more concrete answers. Three structures were tested for the three language backgrounds--Japanese, Spanish, and Persian. In each case, the structure being tested was expected to cause a processing difficulty and in some cases, the experiment predicted the nature of that difficulty then tested the prediction.

The predictions were made on the basis of a combined contrastive and error analysis. By contrastive analysis here is meant the procedure at the basis of Cowan's German-English example: looking at the surface structure of the two languages and deducing the kinds of strategies readers are likely to employ in processing them; then, based on this analysis, making predictions about problems that will arise. Error analysis has a role in the predictions because in most cases, the structures being tested have been noted to result in particular processing difficulties. For a more detailed discussion of the hypotheses being tested, see Ramsay (1976) Spanish; Takayanagi (1975) and Hagihara (1976) Japanese, and Cowan (1976) Persian.

An example of a predicted difficulty tested in this experiment involves native Spanish speakers attempting to read the English Wh-deletion structure (Ramsay). In English, sentence 1 has the same meaning as sentence 2, and both are acceptable.

1 The professor who (whom) Dr. Brown wanted John to meet is in Chicago.

2 The professor Dr. Brown wanted John to meet is in Chicago.

Wh-deletion is not permitted in Spanish, so sentences 3 and 4 are ungrammatical.

* 3 El hombre Bill vió. . .
The man Bill saw . . .

* 4 El hombre el le dijo que se fuera . . .
The man he told to leave . . .

However, there is a structure permitted in Spanish which, on the surface, looks like English Wh-deletion.

5 El hombre, el le dijo que se fuera . . .
The man, he told (someone else) to leave . . .

Note that in sentence 5 a noun and a pronoun come together in the sentence

and they refer to the same person. English has this situation in the appositive construction.

So it is likely and has been noticed by Ramsay that native Spanish speakers, when confronted with the Wh-deletion construction in English, have a strong tendency to read and understand it as an appositive construction. In reading a sentence like number 2, then, a Spanish speaker, if relying on his native language strategy, is likely to understand that the professor's name is Dr. Brown.

The structures tested. The test attempted to test two problem structures for each language group. For all three language backgrounds, one of the structures was tested for a specific, predictable error (as in the case of Wh-deletion above). The second of the structures was tested as a general problem area; that is, subjects were expected to have difficulty, but there was no precise prediction as to the nature of the processing error they would make. Table I lists the structures tested and Table II provides examples of typical test sentences along with the expectations.

Table I

Structures Tested for Each Language Group

	Japanese	Spanish	Persian
precise	Negative in complements	Wh-deletion	Wh-deletion
general	Dangling preposition	Dangling preposition	Dangling preposition

Table II

Examples of Sentences and Expectations for the Structures Tested

Negative in complements

Sentence: Mrs. Smith does not know that her young son is a good student.

Expect: Mrs. Smith knows that her young son is not a good student. Move negative to embedded clause.

Wh-deletion

Sentence: The student Mr. Fernandez told to sit down is my friend.

Expect: The student = Mr. Fernandez

Dangling Preposition

Sentence: The young children who the woman gave the dolls to were smiling.

Expect: difficulty

The testing devices. There were two testing devices. The first, a true/false distracter test, required that the subjects read a source sentence containing one of the structures being tested then respond true or false or ? ("I don't understand") to a statement based on the source sentence. For example, subjects would read silently a source sentence like:

Source: The woman talked to the girl Jane saw in the street.

Then they would read the response statement:

Response: The woman saw Jane in the street and talked to her.

Their task was to say if the response was true or false based on the information provided by the source sentence.

The true/false test was designed to keep the subjects' production to a minimum so that the results illustrated perceptual difficulties only. Distracters were constructed so as to elicit specific processing errors. In the above example, if a subject answered "true" to the response sentence, that meant he was reading "Jane" as an appositive to "girl".

Since the experiment was not attempting to measure knowledge the students had acquired in their structure classes, their exposure to the sentences was timed, the idea being that they should not be allowed time enough to reprocess and apply memorized rules. Five seconds was allowed for reading the source and five seconds for reading and answering the response. Other controls on the items were length, vocabulary and structure. Each source sentence was eleven words long; the vocabulary was kept simple; and the only structural difficulty was the one being tested.

The second testing device was a variation on elicited imitation. Naiman (1974) examines elicited imitation as a research tool for investigating the receptive and productive grammar of English speaking children who are learning French. He concludes that imitation can be used to assess the stage of acquisition of syntactic structures in the production system of second language learners. He also states that it is a useful tool for pointing out differences between comprehension and production grammars. But is seemed that elicited imitation could likewise be used to reveal information concerning perception or comprehension--in some cases subjects imitate incorrectly because they have misunderstood the meaning of the sentence.

The assumption underlying the use of elicited imitation in this experiment is the same as that stated by Naiman: in order to imitate a sentence that is beyond immediate memory span, a speaker must be able to comprehend the grammatical structures present in the sentence, and in order to repeat the model sentence, the speaker must encode the utterance according to his own grammatical system (Naiman, p. 3).

Because the skill being tested in this study was reading, the

imitation task was varied from a task of listening to a sentence then repeating it orally to one of reading then repeating. A subject was shown a card with a sentence on it and was given five seconds to read the sentence; then the card was removed and the subject repeated the sentence orally. Each sentence was fifteen syllables long--a length arrived at on the basis of Naiman and pretests, just longer than that easily stored by short term memory.

Subjects. There was a total of thirty subjects, ten from each language group. All of them were students in the Intensive English Institute at the University of Illinois during the spring semester, 1976. There was an attempt to exert some control on proficiency level--TOEFL scores at the beginning of the semester ranged from 375 to 440. Of course, proficiency was expected to influence scores, and it did.

Test procedure. The tests were administered to subjects individually and on two different days, taking approximately an hour and a quarter total time. Subjects were given a break in the middle of each test session during which time the examiner talked with them casually. A problem anticipated on the basis of the pilot test was having subjects readily deduce the structures being tested. To divert them from the test structures and to provide a form of control against which their test performance might be measured, a number of non-test items were included; these were sentences which did not contain the problem structures.

Results. There are three main questions which the data might be expected to answer. First, did the subjects have more difficulty with the test items than with the non-test items? Secondly, is there a correlation between the two results from the two testing devices? And finally, did the subjects misprocess the sentences in the ways which were predicted?

The answer to the first question is: yes, subjects did have more difficulty with the test sentences than with the non-test sentences. Table III makes clear the differences in percent error on the test and the non-test items.

Table III

Comparison of Error on Test and Non-test Items

Test	Percent Comprehension Error	
	Test	Non-test
True/false Distracter	40%	14%
Elicited Imitation*	30%	1%

*For these figures, errors attributed to production problems were not included.

The question concerning the correlation between the true/false test and the imitation test also has a fairly clearcut answer. Interpretation of the data depends on considering the information revealed by the two tests as complimentary; therefore, it is important that the tests correlate. Table IV displays the correlation for each language group.

Table IV

Correlation of the True/false Test and the Imitation Test

Language Group	Correlation
Japanese	.96
Persian	.92
Spanish	.72 (without one subject,.90)*

*It should be noted that one Spanish speaker had great difficulty with the imitation task; if his scores are deleted, the figure for the Spanish test is .90.

The third question--do the subjects miscomprehend the structures as predicted?--may be answered, yes and no.

The Wh-deletion prediction is essentially the same for the Spanish and Persian native speakers, although the reasoning behind the predicted errors for the two groups is different. The prediction being tested was: when confronted with a Wh-deletion construction, Spanish and Persian speakers learning to read English will have a tendency to perceive and comprehend it as an appositive construction. On both tests on all of the Wh-deletion items for Spanish and Persian subjects approximately 40% of the errors that were made were directly traceable to the subjects' reading of the Wh-deletion construction as an appositive. So the answer is: yes, they are incorrectly processing as it was predicted they would.

Looking at the Japanese subjects reading negatives in complements, however, we must conclude that the prediction does not seem to account for the difficulties. In the true/false test the Japanese subjects chose the predicted incorrect response 29% of the time. But in the elicited imitation, where subjects were free to misinterpret as they wished, there was no instance to show that they were reading the structures in the predicted way. The data shows that the negative was not as great a problem as it was expected to be. But before dismissing the Japanese prediction, it should be pointed out the Japanese subjects had more difficulty with the negative sentences than did the other groups. For example, the Japanese averaged 79% correct responses on the negative items, but by comparison, the Persians averaged 95% correct responses. It seems, from looking at this evidence, that the Japanese negative prediction is not helpful in describing the precise comprehension error that will occur, but it would be helpful as a general indicator of potential difficulty.

A general prediction worth noting is that of the dangling preposition for Spanish speakers, which claims that since preposition fronting is obligatory in Spanish, dangling preposition structures will cause difficulty for Spanish speakers. Built into the imitation task were preposition fronted sentences as well as the dangling preposition sentences. As was expected, Spanish subjects found the preposition fronted structures easier to understand and produce than the dangling preposition structures. They repeated correctly only 19% of the dangling structures, but they repeated 53% of the fronted structures correctly.

Discussion. From these examples, it seems that a contrastive investigation of surface structures of the native and target languages is helpful in predicting areas that are likely to cause processing difficulties for L_2 readers. In some cases such an investigation can predict the nature of the difficulty the learner will encounter. Of course it is not assumed that contrastive predictions can account for all errors across all proficiency levels. Likewise, it is not claimed that the strategies which L_2 readers use to process sentences are based solely on their native language experience.

While it is evident from the data that native language reading strategies can influence and interfere with comprehension of the second language, it is also evident that L_2 readers use strategies which help them interpret difficult sentences in the second language. These strategies might involve a carry-over from the native language or they might be general learning strategies. The discussion will conclude by looking at some of the very interesting evidence revealed by the elicited imitation test in an attempt to characterize some of these strategies.

The following imitations illustrate the predicted phenomenon of subjects reading the Wh-deletion construction as an appositive.

Source: The nice girl Jane likes is in my history class this semester.

Imitation: The girl, Jane, is in my history class this semester.
The girl named Jane is in my history class this semester.

It is evidence of this nature which is taken to confirm the hypothesis that native language perceptual strategies interfere with comprehension of the target language.

One form of the Wh-deletion provides an interesting example of a native language production pattern interfering with target language perception. This Wh-deletion sentence is particularly complex because it involves three people.

Source: The man Mr. Brown wanted him to meet is in New York now.

As ESL teachers are aware, Persians, because of the relative construction in their native language, have a habit of inserting pronouns within clauses where English does not. So a very common target language sentence produced by Persian speakers might be, "The boy who Joe saw him is my friend." where

"him" refers to "boy". It is not surprising that when confronted with a source sentence like the one above, Persians will comprehend it in the way they do.

Imitation: The man who Mr. Brown wanted to meet him (the man) is in New York now.

Notice the similarity of surface structure between the source and the imitation.

One thing which subjects did frequently was to make lexical substitutions. Often they would change proper nouns or confuse pronouns. If they substituted content words usually their substitutions were synonyms or at least reasonable in the context. One of the most interesting substitutions is illustrated below:

Source: The children who the woman gave the dolls to were smiling.

Imitation: The children who the woman gave money were happy.

Here, the subject read "doll" as "dollar" then substituted "money".

In another example a subject seemed to understand the general meaning of the sentence but had trouble reproducing the difficult component of the structure, namely the preposition which dangles.

Source: The lady who the mailman took the mail from is at the desk.

Imitation: The lady who the mailman took the mail is here.

It was not clear from this imitation that the subject understood the sentence. When asked what it meant, she responded, "The mailman took her mail" still excluding the preposition. She could have had in mind the concept of "taking from" or the concept of "taking to". The point seems to be that she did understand the relative clause structure, but she deleted, in production, the part of the structure that gave her difficulty--the part which perhaps to her seemed extraneous, the dangling preposition. This example, then, shows that the production of a form can differ from the basic comprehension of the form.

This deletion of a problem word might be broadly interpreted as a simplification strategy. It was certainly evident from the imitation test that subjects have a strong tendency to simplify a difficult construction. Before the testing began, it was expected that subjects would make no response if they could not understand a sentence, but this was not very often the case. Most of the time they did not hesitate but repeated the sentence confidently. And frequently their responses displayed a simplier form of the structure than that in the source sentence. Their strategy seemed to be: note structural cues, retain content words, then repeat the content words in some form of the cued context with which they were quite familiar. The following are two examples of this simplification strategy.

Source: The man my father helped today is a fireman in Champaign.

Imitation: The man who helped my father is a fireman in Champaign.

Source: The person who the man gave the newspaper to was reading.

Imitation: The person who gave the newspaper was reading.

In both of these cases the relative clause is recognized and repeated, yet the clause is changed to one of subject focus--a form which the subjects are very familiar with reading and producing.

From these examples it seems evident that the elicited imitation test has the potential to reveal information about how second language learners are comprehending English structures. We see evidence that the native language perceptual system and the native language production system can influence target language reading; we also see evidence that second language readers may often not be understanding a difficult structure as a difficult structure but may, in fact, be misunderstanding it as something simpler than it is.

On the basis of this study--which is only a beginning--we might tentatively conclude that L_2 learners do have strategies for reading and understanding structures in the second language. The study attempts to test whether or not reading strategies from the first language are influencing comprehension of the second language, and it seems that in some cases they are. Another important influence on second language reading comprehension seems to be the learner's tendency toward simplification. Certainly second language reading needs and deserves more attention from reading and second language researchers.